

CLAIMS:

I claim:

1. A power amplifying device processing an input alternating current power signal comprising:
 - a rectifier that produces a direct current power signal from the input alternating current power supply signal;
 - a first voltage multiplier receiving a first input signal and a second input signal derived from voltage division of the direct current power signal, and producing a first output signal;
 - a second voltage multiplier receiving a third input signal from the first output signal and a fourth input signal, and producing a second output signal;
 - a pulse width modulation controller receiving a fifth input signal from the second output signal and a sixth input signal from an audio input signal, and producing a third output triangular wave signal as the fourth input signal, and producing a fourth output signal; and,
 - whereas the power amplifying device produces an output power signal based on the fourth output signal and the direct current power signal.
2. The power amplifying device of Claim 1, wherein the first input signal and the second input signal into the first voltage multiplier is the variance of the voltage provided by the direct current power signal.
3. The power amplifying device of Claim 1, wherein the first output signal is the square of the variance of the voltage provided by the direct current power signal.
4. The power amplifying device of Claim 1, wherein a voltage divider coupled to the first voltage multiplier establishes a unity gain level.
5. The power amplifying device of Claim 1, wherein:
 - the third input signal is provided at a non-inverting input of the second voltage multiplier; and
 - the fourth input signal is provided at a inverting input of the second voltage multiplier.
6. The power amplifying device of Claim 1, wherein:

the fifth input signal is provided at the inverting input of the internal comparator; and,
the sixth input is provided at the non-inverting input of the internal comparator.

7. The power amplifying device of Claim 1, wherein the output power signal includes an audio component.
8. The power amplification device of Claim 1, further comprising:
 - a modulated triangular wave signal is the second output signal generated by modulating the amplifier gain and providing the fifth input signal; and,
 - a pulse width modulation signal is the third output signal generated using the modulated triangular wave signal and the audio input signal and providing the seventh input signal.
9. A method of providing an amplified power signal to a load device comprising the steps of:
 - providing an input alternating current power signal;
 - rectifying the input alternating current power signal into a direct current power signal;
 - processing the direct current power signal with a first voltage multiplier based on a first input signal and a second input signal, each the input signal derived from the direct current power signal, wherein the voltage multiplier produces a first output signal;
 - processing the first output signal with a second voltage multiplier based on a third input signal derived from the first output signal and a fourth input signal, wherein the second voltage multiplier produces a second output signal;
 - producing a triangular wave signal with a triangular wave generator, wherein the fourth input signal is derived from the triangular wave signal;
 - modulating the second output of the second voltage multiplier with the output signal of an audio source to generate a third output signal; and,
 - amplifying the third output signal to drive a load device.
10. The method of providing an amplified power signal of Claim 9, further comprising the steps of:
 - deriving a unity gain voltage level using a voltage divider coupled between the source of the alternating current power signal and the first voltage multiplier; and,
 - squaring the unity gain voltage level using the first voltage multiplier, wherein the first output signal is the squared unity gain voltage level.

11. The method of providing an amplified power signal of Claim 10, further comprising the step of:
providing a bridge rectifier coupled between the source of the alternating current power signal and the voltage divider to rectify the input alternating current power signal.
12. The method of providing an amplified power signal of Claim 9, wherein the third output signal is a pulse width modulation output signal generated by the internal comparator.
13. The method of providing an amplified power signal of Claim 9, wherein:
the second output signal is a modulated triangular wave signal; and,
the third output signal is a pulse width modulation signal.
14. The method of providing an amplified power signal of Claim 9, further comprising the step of:
filtering the third output signal to remove a high-frequency carrier component.
15. The method of providing an amplified power signal of Claim 9, wherein the amplified third output signal includes an audio component.
16. An electric circuit for providing an amplified power signal comprising:
an alternating current power source producing an alternating current power signal;
a bridge rectifier coupled to the alternating current power source receiving the alternating current power signal as an input signal;
a triangular wave modulator coupled to the bridge rectifier, the triangular wave modulator having a first voltage multiplier with a first input, a second input, and a first output, and a second voltage multiplier with a third input, a fourth input, and a second output;
the bridge rectifier coupled to at least one of the first or second inputs of the first voltage multiplier with the first output coupled to the third input of the second voltage multiplier;
a triangular wave generator producing a triangular wave output signal, the output signal coupled to the fourth input of the second voltage multiplier;
an internal comparator having a fifth input, a sixth input, and an third output, the fifth input coupled to the second output of the second voltage multiplier;
an audio source signal coupled to the sixth input of the internal comparator, the internal comparator providing a third output; and,

an amplifier coupled to the internal comparator at the third output, the amplifier providing an amplified output signal.

17. The electric circuit for an audio amplifier of Claim 16, further comprising:
 - a power device transistor having a seventh input and a fourth output, with the third output from the internal comparator coupled to the seventh input;
 - a filter device having an eighth input and a fifth output, with the fourth output from the power device transistor coupled to the eighth input; and,
 - the fifth output of the filter device coupled to the input of a load device.
18. The electric circuit for an audio amplifier of Claim 16, wherein the bridge rectifier is coupled to both the first input and the second input of the first voltage multiplier, with the voltage multiplier squaring the variance of the voltage provided by the bridge rectifier.
19. The electric circuit for an audio amplifier of Claim 18, wherein the second voltage multiplier modulates a triangular wave signal from the triangular wave generator using the square of the voltage variance to generate a modulated triangular wave signal as the second output.
20. The electric circuit for an audio amplifier of Claim 16, wherein the bridge rectifier is coupled to the input of a resistor voltage divider network and the output of the resistor voltage divider network is coupled to the first voltage multiplier.
21. The electric circuit for an audio amplifier of Claim 16, wherein the third output from the internal comparator is a pulse width modulation signal used for powering a load device.
22. A method for providing an amplified direct current power signal to a load device coupled to an amplifier comprising the steps of:
 - providing a power supply source to an amplifier circuit;
 - establishing a unity gain level for a variance of power supply voltage in the amplifier circuit using a voltage divider;
 - modulating a triangular wave signal using the square of the supply voltage variance to generate a modulated triangular wave signal;
 - modulating an audio signal with the modulated triangular wave signal to generate a pulse width modulation signal for powering the load device; and,

amplifying the pulse width modulation using the amplifier circuit to provide the amplified direct current power signal.

23. The method for providing an amplified direct current power signal of Claim 22, further comprising the step of:

squaring the variance of power supply voltage using a first voltage multiplier to generate the squared variance of power supply voltage at a first output.

24. The method for providing an amplified direct current power signal of Claim 22, further comprising the step of:

using a second voltage multiplier with a first input, a second input, and a second output, with the first output from the first voltage multiplier providing the first input and a triangular wave signal providing the second input, to generate the modulated triangular wave signal at the second output.

25. The method for providing a clean direct power signal of Claim 22, further comprising the step of:

using an internal comparator with a third input, a fourth input, and a third output, with the modulated triangular wave signal second output providing the third input, and the audio signal providing the fourth input, to generate the pulse width modulation signal at the third output.